Part Two: Analysis of Key Economic Sectors in the Delta

Chapter 5: Framework for Analysis

Chapters 6–11 present analyses of key components of the Delta economy: agriculture; recreation and tourism; local government services; other economic sectors including services, transportation and development; and an integrated analysis of the Delta's Legacy Communities. This chapter discusses the framework that will be utilized for the analysis, and defines the scenarios for policy choices that will be made in the Delta in four important areas: water conveyance, habitat enhancement, levee and flood control investment, and land-use regulation.

Each of these chapters follows a common framework. First is a data-driven description of the current baseline and trends for the sector, which may include reference to other significant reports on the sector. Second is discussion of the likely outcomes for the economic sector under the baseline policy scenario, followed by recommendations that might improve economic sustainability under the baseline scenario. Third, each chapter includes an evaluation of the positive and negative impacts of alternative policy choices on economic sustainability in each area. Some topics, such as taking land out of agricultural production, are suited for a detailed quantitative analysis. Other topics, such as how the creation of tidal marsh could affect Delta tourism and recreation, will necessarily rely on more qualitative analysis and expert opinion. Finally, each chapter will include discussion of additional issues or proposals as appropriate, including relevant strategies outlined in the Delta Vision strategic plan. In some chapters, there will be discussion of additional issues or proposals. For example, the recreation chapter will discuss the potential effects of National Heritage area designation, and a recent recreation plan developed by California State Parks.

1 Baseline Scenario

The baseline analytical scenario is the vision that includes few major policy changes. However, it is not a "status quo" scenario as some significant human and environmental changes are likely in the Delta between now and 2050. Population growth will continue in the Delta counties, some agricultural land will be developed in the secondary zone within city boundaries, sea level is expected to increase by a foot, tertiary treatment will become operational at most municipal wastewater plants discharging into the Delta and improve water quality, and significant investment in levees will occur.

As discussed in Chapter 2, the population of the region surrounding the Delta is growing. The 2010 Census found the population in the five Delta counties was 3,767,312 and grew at a 1.4 percent annual rate over the decade, slightly faster than the 1 percent annual growth rate for the state of California. Based on the 2010 Census results, the forecasting firm Global Insight projects the five-county population will reach 5.57 million in 2040, a growth rate that projects to 6.1 million in 2050. Higher projections from the California Department of Finance, most recently updated in 2007, put the 2050 population at 6.9 million. Despite this growth, the population of the Primary Zone of the Delta has remained steady, and is projected to remain constant in the baseline scenario. In contrast, the Secondary Zone will continue to experience significant growth within the boundaries of its incorporated cities.

For the four policy choices, the baseline scenario is as follows. The baseline scenarios are not recommended policy choices, but simply represent the most logical starting place for the analysis. Baseline conditions could be recommended for some policy choices, but not others.

- *Baseline Water Conveyance*: Through-Delta Conveyance. Under this scenario, water would continue to be conveyed to the south Delta pumps through Delta channels. The

level of water diversions would be constrained to less than 5 million acre feet per year in compliance with the current biological opinions.

- *Baseline Habitat Conservation Measures*: None. None of the habitat conservation measures outlined in the BDCP drafts would be implemented in the baseline scenario. The positive and negative impacts of each of the major conservation measures will be assessed individually in the other scenarios.
- *Baseline Flood Control*: All levees upgraded to PL 84-99. As discussed in Chapter 4, the upgrade of most Delta levees to PL 84-99 standards is a reasonable expectation with currently identified resources and on-going maintenance. Most levee breaks would be repaired to original conditions and islands restored. Unincorporated towns in the Primary Zone would remain in the 100-year flood plain, significantly constraining development. Urban areas in the Secondary Zone such as West Sacramento would successfully achieve 200-year flood protection status in accordance with current plans.
- *Baseline Land Use Policy*: Current Policy. Delta Protection Commission guidelines remain in place over the Primary Zone, and land-use planning and regulation would remain under the jurisdiction of local governments. The Delta Stewardship Council does not take an active regulatory role in regards to Delta land use.

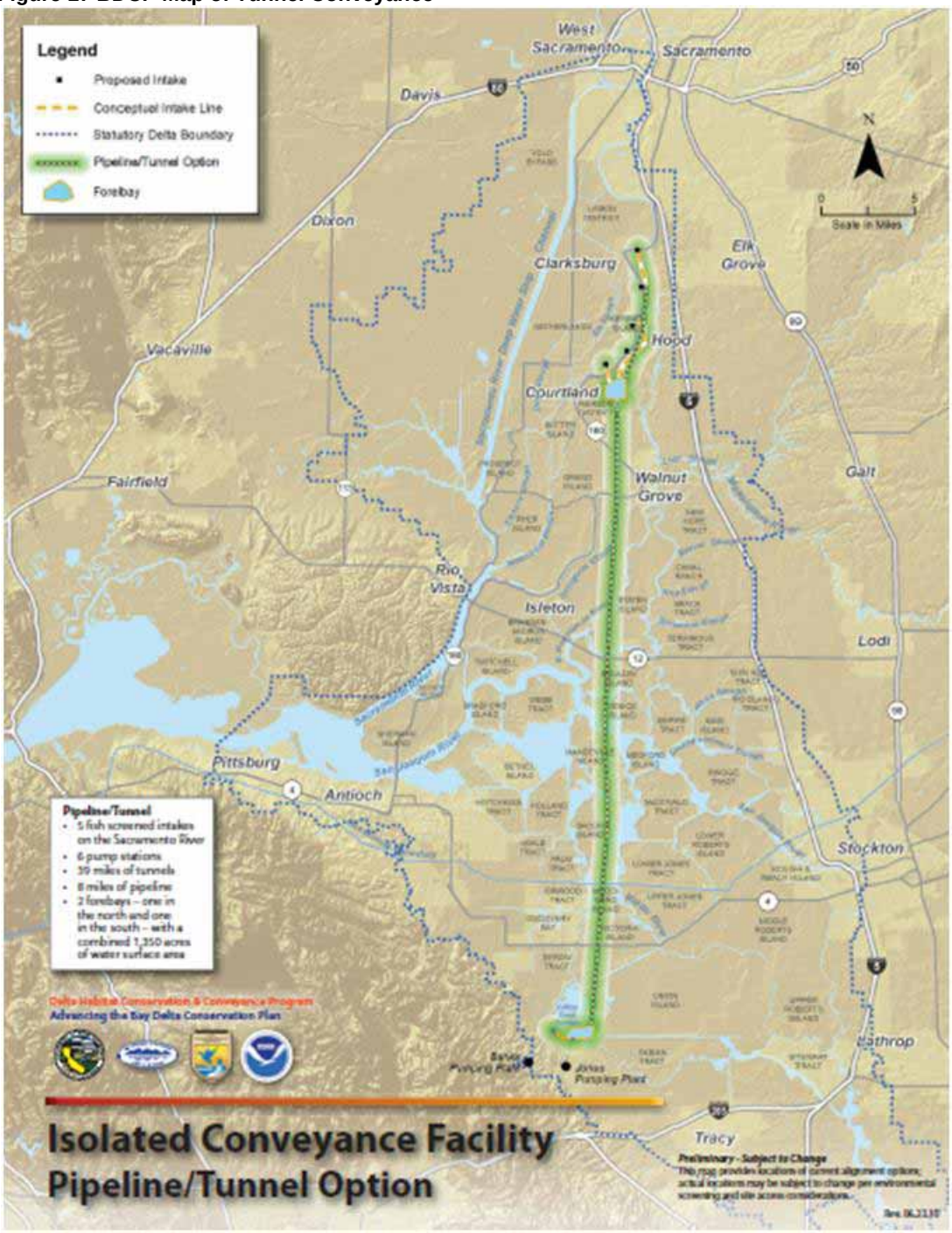
2 Isolated Conveyance Scenario

The leading proposal for new water conveyance facilities in the Delta is a 15,000 cfs (cubic feet per second) tunnel extending from the Sacramento River near Hood to the CVP and SWP pumps near Tracy. The facility would include a pair of 34-mile long, 33 ft. diameter tunnels running between a new intermediate forebay near Courtland to a new forebay adjacent to the existing Clifton Court Forebay near Tracy. Five new water intakes would be built along the Sacramento River between Clarksburg and Courtland, and another 13 miles of pipeline would be required to convey water from the five intakes to the intermediate forebay. Each of the five intakes and the intermediate forebay would have pumping plants with a combined 210 MW electrical load.

According to the operational criteria described in the latest BDCP documents, the new conveyance would increase average water exports from the Delta in 2025 from 4.7 maf with through-Delta conveyance under the existing biological opinions to 5.4 to 5.9 maf. The footprint of a tunnel is significantly less than a surface canal, it will still consume roughly 8,000 acres, mostly agricultural land in Sacramento and San Joaquin counties. The new intake facilities will significantly alter the shoreline of the Sacramento River between Clarksburg and Courtland.

The goals for in-Delta agricultural, municipal, and industrial water quality are among the most important provisions for the Delta economy. Both the November 2010 draft BDCP and a May 2011 revised operation documents state that existing D-1641 water quality standards will be met in the north and west Delta with the measuring point moved slightly upstream in the Sacramento River. Notably, none of the BDCP operations descriptions make any commitments to water quality in the central or southern Delta, the areas expected to see the most significant salinity impacts from isolated conveyance. The uncertainty surrounding Delta water quality impacts and the importance of the issue to the Delta economy makes it one of the most difficult issues to assess in the economic sustainability plan.

Figure 17 BDCP Map of Tunnel Conveyance



While alternative sizing and other options for water conveyance are under development and consideration, none of these options has been described in sufficient detail at this time to be included in this analysis. Thus, the tunnel conveyance described in the most recent BDCP is the only alternative to through-Delta conveyance that will be considered in this report. As alternatives—such as a smaller 3,000 cfs isolated conveyance facility—are developed in more detail, additional analysis would be warranted.

Financing Isolated Conveyance: Potential Risks for Delta Communities and Taxpayers

While the impacts on customers of state and federal water projects is beyond the scope of this project, the financial feasibility of water contractors' plans to pay for the proposed isolated conveyance is of critical importance to economic sustainability in the Delta. There are significant questions as to whether isolated conveyance is financially feasible, especially if operated under the proposed operating criteria.

Inadequate financing could create serious problems such as 1) pressure to increase water exports from the Delta beyond agreed upon environmental and in-Delta water quality protections to create revenue for debt service, 2) pressure to divert funds from Delta mitigation, habitat improvement, and flood control programs, 3) subsidies that divert general tax revenues from other public needs, 4) increased pressure for transfers of water from San Joaquin Valley agriculture to urban customers that could adversely affect the San Joaquin Valley agricultural economy over and above losses to Delta agriculture, and 5) the risk of a costly stranded asset that unnecessarily burdens water ratepayers for decades.

3 Habitat Conservation Scenarios

In addition to isolated water conveyance, the BDCP proposes 18 additional conservation measures. Similar conservation measures are under consideration by the Delta Stewardship Council for the Delta Plan, and some of these measures are also included in the Ecosystem Restoration Program proposed by the Department of Fish and Game. In this report, we use the draft BDCP descriptions of the conservation measures, because they are more detailed and thereby better suited to the analysis.

The individual conservation measures could have negative or positive impacts on different aspects of the Delta economy. Our analysis will not examine all 18 measures, but focus on five major proposals that would change the current use of 1,000 acres or more of Delta land or impact at least 10 linear miles of shoreline. For simplicity, the measures will be considered individually rather than as a package at this initial stage. The five major conservation measures include:

- *Yolo Bypass Fisheries Enhancements*: Requires 22,000 to 48,000 acres in new flowage easements. More frequent flooding and improved fish passage in the Yolo bypass will benefit fish, but will impact agricultural production.
- *San Joaquin River Floodplain Restoration*: Creation of new seasonally-inundated floodplain habitat along the San Joaquin River between Vernalis and Stockton using setback levees. Approximately 10,000 acres of land would be in the new floodplain.
- *Tidal Habitat Restoration*: Up to 65,000 acres in agricultural land converted to tidal habitat in designated zones throughout the Delta. This scenario requires breaching levees and restoring subsided islands to shallow water habitat. If fully implemented, this strategy would affect the most agricultural land and have the highest capital costs. Preliminary cost estimates are $1.5 billion or more than $23,000 per acre of tidal marsh created.
- *Natural Communities Protection*: There are several elements to this conservation measure including the acquisition of 8,000 acres of rangeland for conversion to natural

grasslands, acquiring agricultural easements or purchases on 32,000 acres that would be restricted to "wildlife friendly" agriculture, and the conversion of 700 acres of rangeland to vernal pools and alkali wetlands.

- *Channel Margin Habitat*: 20 linear miles of north Delta waterways would be altered with setback levees and shallow water habitat along the river.

For the first two conservation measures on this list, it is important to note that there are locally developed alternative proposals that are likely to be preferred alternatives for Delta economic sustainability. For the San Joaquin River floodplain, an enhanced flood bypass at Paradise Cut has been negotiated between environmental groups and local landowners and reclamation districts. Yolo County is in the process of developing an alternative proposal for Yolo Bypass fishery enhancements that is less costly on the local agriculture economy than the BDCP proposal.

4 Levee Scenarios

Investment in levees and other flood control measures could be more or less than described in the baseline scenario. Some have proposed creating large expanses of open water habitat in the Delta through the intentional flooding of Delta islands or an explicit policy of not repairing islands when and if they flood in the future. On the other hand, an increased level of levee investment within the Primary Zone could bring some areas to 100-year or 200-year levels of flood protection and allow increased opportunities for economic development. These two scenarios are not mutually exclusive. For example, reduced levee investment in some less populated locations could be combined with increased investment in more populated areas near Delta Legacy Communities. Our analysis defines plausible scenarios of low and high levee investment, and discusses their implication for various aspects of the Delta economy.

Six Island Open Water Scenario

There have been proposals to transform large expanses of the Delta to open water. Proponents argue that open water could provide environmental benefits to native fishes, and that it isn't cost-effective to repair or upgrade levees around most Delta islands. The most expansive proposals would transform 20 or more Delta islands to open water, and are illustrated in the "eco-friendly" Delta map in a recent report from the Public Policy Institute of California. As discussed in detail in an appendix, the Suddeth, Mount and Lund (2010) analysis understates the benefits and overstates the costs of maintaining Delta islands. In addition, this strategy faces substantial legal and political hurdles that make the more expansive open water scenarios exceedingly unlikely. A very expansive open water scenario is clearly incompatible with economic sustainability in the Delta, and there is little point in evaluating it in detail.

However, a smaller open-water scenario is likely to be considered as a possible component of the Stewardship Council's Delta plan and is more economically, legally, and politically viable. A smaller scenario is illustrated in a recent letter from Jeff Mount to the Delta Stewardship Council, and in Figure 9 of the Suddeth, Mount and Lund (2010) paper. The result comes from running the Suddeth, Mount, and Lund analysis with assumed property values that more closely match market values and a more accurate infrastructure costs, but still does not capture all of the economic benefits provided by the levees. Thus, this scenario can be considered a reasonable upper-bound on the extent of open water that could be economically justified in the Delta. Most notably, the figures illustrate six contiguous islands in the Central Delta as open water. These islands are the most attractive candidates for open-water habitat because they are very sparsely populated, mostly grow low-value agricultural crops, and are not crossed by completed major physical infrastructure such as highways, railroads, or natural gas pipelines.

However, Empire Tract has major infrastructure currently under construction as it is the location for the intake and a significant section of pipeline for the City of Stockton's $217 million Delta Water Supply Project. This infrastructure was not considered in the UC-Davis/PPIC studies, and adding the value of this infrastructure to the framework would almost certainly take Empire Tract out of consideration as well. Some other studies place Webb Island in the group of western islands critical for protecting through Delta water exports from salinity, and thus Webb islands' levees may also be considered major infrastructure.

While the lack of physical infrastructure and population substantially reduces the cost of permanent flooding compared to nearby islands like Bouldin and McDonald, eliminating these islands would still entail significant economic costs. These costs would include but are not limited to the elimination of about 10,000 acres of farmland and some recreational facilities, increased dredging costs for the Stockton Deepwater Ship Channel, and significant reinforcement of nearly 50 miles of adjacent levees that would be subject to increased pressure from waves and under seepage.

Increase to Higher Standard Levees in Targeted Areas
In this scenario, areas surrounding strategically targeted areas would have levees upgraded beyond the PL 84-99 standard. As explained in Chapter 4, these could be upgrades to increase seismic resistance in the western Delta or other target areas, or they could be upgrades to support at least 100-year flood protection in and around Legacy Communities to allow development and investment consistent with the rural character of the Delta. This scenario would also further the statewide goal of increased water supply reliability, would allow the growth of natural vegetation on the water side of the levees as part of an overall ecosystem restoration plan, provide a basis for addressing possible sea-level rise, and would provide increased protection for the critical infrastructure that passes through the Delta.

5 Regulatory Scenarios

In these scenarios, we take a first pass at envisioning how adjustments to the land-use regulatory framework could affect economic sustainability in the Delta. The fourth draft of the Delta Plan under development by the Delta Stewardship Council envisions expanded land-use regulations in the Legal Delta to support the coequal goals of water supply reliability and ecosystem restoration. In contrast, some of the Delta counties are interested in reducing the restrictions in the current Delta Protection Commission guidelines in concert with increased flood control investments.

Increased Land Use Regulation (Delta Stewardship Council Proposal)
Increasing the regulatory power of the Delta Stewardship Council could affect economic sustainability in the Delta. As the Stewardship Council's third draft plan is written, any proposed investment in the Legal Delta outside the existing spheres of influence of incorporated cities would be regulated by the Delta Stewardship Council if it were to take place in a location that is a potential location for a conservation measure or water conveyance facility in the future. Compared to the current regulatory framework, the proposal would increase the level of regulation in the Primary Zone and expand the regulatory reach of State agencies in the Delta into most of the Secondary Zone. The policy would restrict and increase the cost of property improvements for many Delta residents, businesses, and local governments beyond that experienced in other areas of the state making the Delta a comparatively less attractive area for new investment.

Specifically, the fourth draft of the Stewardship Council's Delta Plan states (Chapter 3, page 41, **bold emphasis added**):

> However, in some cases, actions taken by local or State agencies are "covered actions" as defined in Water Code section 85057.5. **The State or local agency proposing to carry out, approve, or fund a "covered action" certifies the consistency of the covered action with the Delta Plan and files a certificate of consistency with the Council**. A certificate of consistency may be appealed to the Council within 30 days, alleging that the proposed covered action is not consistent with the Delta Plan…
> Only certain activities qualify as covered actions, and the Act establishes both criteria and exclusions. This Delta Plan further clarifies what is and is not a covered action. As an example, routine levee maintenance by a reclamation district in the Delta would not be a covered action because it is statutorily excluded. Also, an addition to a house in the Delta would likely not be a covered action because it would not appear to meet the criteria. This Delta Plan incorporates and builds upon existing state policies where possible, with the intention of meeting the Act's requirements without establishing an entirely new set of policies. For example, Delta Plan regulatory policies on reducing flood risk incorporate recent California legislation that requires upgrades to levees protecting urban areas.
>
> **In other cases, Delta Plan regulatory policies seek to prevent actions that may preclude the future implementation of projects that meet the requirements of that Act, such as the acquisition of floodplain area for construction of a new bypass or restoration of certain lands uniquely suited to habitat. Similarly, the Delta Plan includes regulatory policies to protect floodplains and floodways until studies are completed by the Department of Water Resources.**

Reduced Land-Use Regulation for Targeted Areas or Industries and around Legacy Communities

While the trend is towards increasing regulation at the state level, some local governments around the Delta are interested in reducing regulation to promote economic development. The signs of stagnation within existing communities are thought by some to be caused by excessive regulation that discourages new investment. One mechanism proposed for reducing regulation is to shift some of the Delta Legacy Communities from the Primary to the Secondary Zone, an unlikely change since it would require an act of the State legislature. Some small adjustments may also be accomplished through revisions to the Delta Protection Commission's Land Use and Resource Management Plan.

In addition to the Delta Protection Commission Plan and County General Plans, it is important to note that all of these areas have been remapped into the FEMA 100-year flood zone, or are in the process of being added to the 100-year flood zone. Thus, reduced regulation would have little impact unless it were combined with increased flood-control investments and technical evaluations to achieve designation for 100-year flood protection or potentially 200-year urban flood protection in the designated area. The increased development opportunities could generate resources to help finance flood-control and other infrastructure investments in Legacy Communities, but are unlikely to be self-financing at a scale that is consistent with the rural character of the Delta. Thus, some of the analytical chapters consider the increased flood control and reduced land-use regulation scenarios as a package rather than individually.

Another option for reducing land-use regulation in the Delta would be to expand the list of exemptions for "covered actions" in the Delta Plan to include important investments necessary

to sustain and enhance the agriculture and recreation and tourism economy in the Delta. This would not relax regulation compared to our baseline scenario, but would create additional flexibility in the regulation of covered actions in the Stewardship Council's draft Delta Plan.

6 Delta Vision Strategies

As discussed in Chapter 3, the October 2008 Delta Vision Strategic Plan provided a list of strategies and actions to support their second goal, "Recognize and enhance the unique cultural, recreational and agricultural values of the California Delta as an evolving place, an action critical to achieving the coequal goals." The specific actions were:

- Apply for designation of the Delta as a federally recognized National Heritage Area.
- Expand the State Park and Recreation Area network in the Delta.
- Establish special Delta designations within existing federal and state agricultural support programs, primarily regional labeling and marketing programs.
- Conduct research and development for agricultural sustainability in the Delta, focusing on developing agricultural practices consistent with habitat and ecosystem restoration.
- Establish new markets for innovative agricultural practices such as carbon sequestration credits and conservation easements.
- Charge the Delta Protection Commission with creating a regional economic development plan that addresses agriculture, recreation, tourism, and innovative land use.
- Establish enterprise zones that use tax incentives to spur investment at the major "gateways" to the Delta.
- Establish a Delta Investment Fund for regional economic development and adaptation. Initiate the fund with state funding, and structure it to accept revenues from federal, state, local, and private sources.
- Adopt land-use policies that enhance the Delta's unique values and that are compatible with the public safety, levee, and infrastructure strategies.

For some of the strategies, action is in progress or complete such as the feasibility study for Natural Heritage areas, a recent report from the UC Agricultural Issues Center that assessed the viability of some alternative and innovative agricultural approaches in the Delta, and the preparation of this Economic Sustainability Plan.

The state budget and larger fiscal trends have presented significant challenges for some of the other strategies. While State Parks has developed a plan for the Delta, fiscal pressures have put all the state parks and recreation areas in the Delta on the closure list, the opposite of expanding the network. Enterprise zones were initially targeted for elimination in the 2011-12 state budget. Although enterprise zones survived this year's budget cuts, actions continue to reduced and reform enterprise zones, and the prospect for approving significant new enterprise zones is low.

Other strategies are discussed when appropriate in the analytical chapters, and promising strategies will be reinforced in the final recommendations including specific priorities and strategies for the Delta Investment Fund.